

**REMARKS**

Claims 2-4, 7-16, 28, 29, and 31-34 are pending. Reconsideration of the rejections of these claims respectfully is requested, as follows:

1. Rejection under 35 U.S.C. § 103(a) based on Koo in view of DeTemple et al.:

Claims 3, 4, 7, 8, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,169,295 to Koo in view of U.S. Pat. No. 5,572,653 to DeTemple et al. Applicants respectfully request reconsideration of this rejection.

Claim 7 recites an imaging device including “a semiconductor imaging chip” supported by a support structure. The “semiconductor imaging chip” has “an array of photosensitive elements.” The imaging device features a “package encapsulating said frame, support structure, and semiconductor imaging chip in a transparent material.”

Koo discloses an individual infrared transceiver module packaged in transparent material. The IR transceiver module does not contain a “semiconductor imaging chip” that has “an array of photosensitive elements.” In addition, Koo does not teach or suggest a “package encapsulating...said semiconductor imaging chip in a transparent material.”

The Office Action asserts that it is “conventional in the art to form a plurality of photosensitive elements in order to make a functioning device.” Applicant respectfully notes that while it may be conventional to form a plurality of photosensitive elements, the statement, while generally true, it is not being applied to the recitations of claim 7. Instead, it appears that the Office Action is improperly characterizing claim 7 in general terms, and not addressing its specific recitations. In particular, claim 7 does not recite simply a plurality of photosensitive elements to make any functioning device, but rather recites an imaging device including a “semiconductor imaging chip” that has “an array of photosensitive elements,” and features a “package encapsulating...said semiconductor imaging chip in a transparent material.” These recitations are not disclosed or suggested by Koo.

The Office Action relies DeTemple et al. to provide an example of a functioning device that would render claim 7 unpatentable; however, DeTemple et al. discloses a security monitoring system that includes individual IR transceiver modules arranged in a grid. The monitoring grid is installed across the ceiling of a convenience store, for example, and tracks the location of tags on consumer items. The security system disclosed by DeTemple et al. is not an “imaging device.” Further, DeTemple et al. does not disclose a “semiconductor imaging chip” that has “an array of photosensitive elements.” Moreover, DeTemple et al. does not teach or suggest a “package encapsulating said...semiconductor imaging chip in a transparent material.” Absent any motivation, and without that provided by the present disclosure, one of ordinary skill in the art would not be driven by the disclosures of Koo and DeTemple et al. to produce an imaging device with a “semiconductor imaging chip” that has “an array of photosensitive elements,” formed within a “package encapsulating said frame, support structure, and semiconductor imaging chip in a transparent material” as recited in claim 7.

Further, in order to combine Koo and DeTemple et al. to produce the invention of claim 7, one must make significant modifications to the devices disclosed by both references. For example, each individual IR transceiver of Koo would have to be converted to a “semiconductor imaging chip” with “an array of photosensitive elements.” The monitoring grid of DeTemple et al. would need to be formed within a “package encapsulating said frame, support structure, and semiconductor imaging chip in a transparent material.” There is no motivation in these references to make the necessary modifications, as would be required for a proper rejection under 35 U.S.C. §103(a). For example, the security grid of IR transceivers disclosed by DeTemple et al. is spread out across the ceiling of a store. Even if the grid somehow could be characterized, albeit incorrectly, as an “array” provided on a “semiconductor imaging chip,” there is no motivation to provide the grid in a “package encapsulating said...semiconductor imaging chip in a transparent material.”

In addition, the Office Action provides no explanation of how the teachings of the two references combine to produce the invention as recited in claim 7. It appears to Applicants that the combination will provide a grid of individual IR transceivers, whereas the rejection seems to be predicated on the combination disclosing or suggesting an “imaging device” with an encapsulated “semiconductor imaging chip” having “an array of photosensitive elements.” Absent any explanation in the Office Action, Applicants are unable to determine how these two references could in any way be properly combinable to provide an imaging device as recited in claim 7. Moreover, nothing of record establishes that an array of IR transceivers formed in a “package encapsulating said frame, support structure, and semiconductor imaging chip in a transparent material” would function as an imaging device. The rejection evidently relies on hindsight in an improper attempt to replicate the claimed subject matter using the prior art. The invention of claim 7 is patentable over the proposed combination of references to Koo and DeTemple et al., along with dependent claims 2, 3, 4, 8, 9, 10, 32, and 34.

2. Rejection under 35 U.S.C. § 103(a) based on Koo in view of DeTemple et al. and Park et al.:

Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Koo in view of DeTemple et al. and U.S. Pat. No. 5,053,298 to Park et al. Reconsideration of this rejection respectfully is requested.

Claims 9 and 10 depend from claim 7, and therefore are patentable over Koo and DeTemple for at least the reasons set forth above with reference to claim 7. Park et al. has not been cited against claim 7, and in any event does not cure the deficiencies of the proposed combination of Koo and DeTemple et al. Park et al. discloses a color filter having color filter layers 39, 45, 51 formed over a polyimide planarizing layer 37. Park et al. does not provide elements missing from the proposed combination of Koo and DeTemple et al., such as a “semiconductor imaging chip” that has “an array of photosensitive elements,” and a “package encapsulating said....semiconductor imaging chip in a transparent material.” Park et al. also does not provide the motivation needed to

combine Koo and DeTemple et al. Koo and DeTemple et al. disclose individual IR transceiver modules. Park et al. provides no motivation to modify the infrared sensor grid combination of Koo and DeTemple et al. to incorporate the color filter array disclosed by Park et al. Any motivation to combine the references appears, therefore, to come only from Applicants' disclosure used improperly in an attempt to piece together selected teachings of the prior art and reconstruct the recited subject matter. Indeed, even if properly motivated, the proposed combination would appear to Applicants to produce a grid of infrared sensors, which sense a predetermined wavelength of light, with a color filter array for different wavelengths of light, which is nonsensical.

In addition, the Office Action attempts to characterize Park et al. as establishing that it is conventional to incorporate color filters within transparent material 37. Applicant respectfully disagrees, and submits that Park et al. discloses color filter patterns 38, 43, 49, formed in the upper region of the polyimide planarizing layer 37. The color filter patterns are not color filters, however. Color filtering is provided by color filter layers 39, 45, 51. These layers are formed not formed within transparent material 37. Instead, color filter layers 39, 45, 51 are formed over the polyimide planarizing layer 37. Claims 9 and 10 are patentable over the proposed combination of Koo, DeTemple et al., and Park et al.

3. Rejection under 35 U.S.C. § 103(a) based on Koo in view of Anderton et al.:

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Koo in view of U.S. Pat. No. 5,596,228 to Anderton et al. Reconsideration of this rejection is requested.

Claim 2 depends from claim 7. Koo and Anderton et al. have not been applied against claim 7; rather, the combination of Koo and DeTemple et al. was applied. Accordingly, this rejection of dependent claim 2 based on Koo and Anderton et al. is not fully understood. Further, Applicants submit that claim 7 is patentable over the proposed combination of Koo and Anderton et al. As noted above, claim 7 recites an imaging device including "a semiconductor imaging chip" supported by a support structure. The

“semiconductor imaging chip” has “an array of photosensitive elements.” The imaging device features a “package encapsulating said frame, support structure, and semiconductor imaging chip in a transparent material.” Koo does not teach or suggest the invention recited in claim 7, so the Office Action proposes combination with Anderton et al. Anderton et al. does not cure the deficiencies of Koo. The Office Action suggests that it would be obvious to arrange the IR transceivers of Koo in a two dimensional array. Applicants note, however, that the imaging function and purpose of a “semiconductor imaging chip” having “an array of” IR *transceivers* in a “package encapsulating said semiconductor imaging chip...in a transparent material” are not evident from the cited prior art, and have not been explained by the Office. Further, Koo specifically states that the IR transceivers are not imaging devices, so any motivation for combining or modifying the IR transceivers to produce an imaging array appears to come only from Applicants’ disclosure. Claim 7, and its dependent claim 2, are patentable over the cited prior art.

4. Rejection under 35 U.S.C. § 103(a) based on Enomoto in view of Koo:

Claims 11-13, 15, and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 5,321,297 to Enomoto in view of Koo. The rejection of these claims is traversed.

Claim 11 recites an imaging system including, *inter alia*, “a plurality of imaging devices.” Each of the plurality of imaging devices includes “a semiconductor device including an array of photosensitive elements, each semiconductor device being mounted on a respective frame, each of said frames having a support structure.” Each “frame, support structure, and respective semiconductor device is encapsulated in a respective package...each of said packages being formed of transparent material, said transparent material including injection molded resin.”

Enomoto discloses an image pickup device including an array of photodiodes 2. Each individual photodiode 2 is provided with a light converging lens, the curvature of which can be independently adjusted. Enomoto does not teach or suggest an imager with

a plurality of imaging devices, each imaging device being made up of “a semiconductor device including an array of photosensitive elements, each semiconductor device being mounted on a respective frame, each of said frames having a support structure.” In addition, Enomoto does not teach or suggest a plurality of imaging devices, each having a “frame, support structure, and respective semiconductor device” encapsulated in a respective package, “each of said packages being formed of transparent material, said transparent material including injection molded resin.” Claim 11 is accordingly patentable over Enomoto.

Koo does not cure the deficiencies of Enomoto. Specifically, Koo teaches individual IR transceiver modules. Koo does not provide elements missing from Enomoto, such as “a plurality of imaging devices,” each imaging device being made up of “a semiconductor device including an array of photosensitive elements.” Claim 11 and its dependent claims 12-16 are patentable over the proposed combination of Enomoto and Koo.

5. Rejection under 35 U.S.C. § 103(a) based on Enomoto in view of Koo and Park et al.:

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Enomoto in view of Koo, further in view of Park et al. Reconsideration of this rejection respectfully is requested.

Claim 14 depends from claim 11, which is patentable over Enomoto and Koo for the reasons noted above. Park et al. does not cure the deficiencies of Enomoto in view of Koo. As noted above, although Park et al. is cited in the Office Action for disclosing a color filter formed in plastic, the color filter layers 39, 45, 51 are formed over the polyimide (plastic) planarizing layer 37. Moreover, Park et al. does not provide the elements missing from the proposed combination of Enomoto and Koo to provide “a plurality of imaging devices,” each imaging device being made up of “a semiconductor device including an array of photosensitive elements.” Claim 14 is patentable over the proposed combination of Enomoto, Koo, and Park et al.

6. Rejection under 35 U.S.C. § 103(a) based on Enomoto in view of Koo:

Claims 28, 29, 31, and 33<sup>1</sup> stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Enomoto in view of Koo. Reconsideration of this rejection respectfully is requested.

Claim 28 recites an imaging device including, *inter alia*, “a housing having a cavity and a bottom surface,” and “a semiconductor imaging chip located within said cavity of said housing.” The semiconductor imaging chip includes “an array of photosensitive elements.”

Enomoto discloses a semiconductor imaging array. Each pixel 2 of the array is developed in a well formed in semiconductor substrate 1. Enomoto does not teach or suggest a housing and a semiconductor imaging chip including “an array of photosensitive elements” located within a “cavity of said housing.”

Koo does not cure the deficiencies of Enomoto. As discussed above, Koo discloses individual infrared transceiver modules. Consequently, Koo does not disclose missing features or suggest modifying the device disclosed by Enomoto to provide a housing and a semiconductor imaging chip including “an array of photosensitive elements” located within a “cavity of said housing.” Claim 28 and its dependent claims 29, 31, and 33 are patentable over the proposed combination of Enomoto and Koo.

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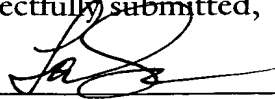
<sup>1</sup> The Office Action contains no rejection of claim 33. Applicant assumes that claim 33 stands rejected with claims 28, 29, and 31.

In view of the above, Applicants believe the pending application is in condition for allowance.

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Respectfully submitted,

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